

IN THE CLAIMS

Please amend the claims as follows:

1-62 (Canceled).

63 (Currently Amended): An electrostatic actuation device comprising:

at least one mobile electrode, comprising at least one mobile part that is flexible and free to move with respect to a substrate, and an electrical contact element fixed on the mobile part;

at least two fixed electrodes, fixed with respect to the substrate, wherein the at least two fixed electrodes are located on a same side of the mobile electrode and each facing the mobile part of the mobile electrode; and

means for forming at least one pivot of at least one portion of the mobile electrode, said means forming at least one pivot being disposed directly under the mobile part that is flexible and free to move,

wherein each of the at least two fixed electrodes are configured to progressively force the mobile part of the mobile electrode facing each of the fixed electrodes, respectively, to contact the substrate as a function of applied voltage, and

the mobile part bears directly on the means forming at least one pivot when one of the fixed electrodes attracts a first portion of the mobile part of the mobile electrode facing the fixed electrode, and another portion of the mobile part of the mobile electrode is configured to move away from the substrate by mechanical return forces, thereby moving the electrical contact between a high position and a low position.

64 (Previously Presented): A device according to claim 63, wherein the at least one mobile part extends along at least one direction perpendicular to the substrate.

65 (Previously Presented): A device according to claim 63, wherein the at least two fixed electrodes are separated from the mobile electrode by an insulating layer.

66 (Withdrawn): A device according to claim 63, wherein the mobile part of the mobile electrode is connected by a pad to a membrane.

67 (Previously Presented): A device according to claim 63, wherein the means for forming the at least one pivot includes at least one pad fixed with respect to the substrate.

68 (Withdrawn): A device according to claim 63, wherein the means for forming the at least one pivot includes at least one arm arranged laterally with respect to the mobile part, or two arms arranged on each side of the mobile part.

69 (Withdrawn): A device according to claim 63, wherein the mobile part of the mobile electrode forms an elbow.

70 (Withdrawn): A device according to claim 63, comprising four fixed electrodes arranged in pairs facing each other, the mobile electrode comprising two mobile parts arranged crosswise.

71 (Withdrawn): A device according to claim 70, comprising two pivots.

72 (Previously Presented): A device according to claim 65, wherein the mobile electrode comprises at least one part embedded or fixed on or in the substrate or the insulating layer.

73 (Previously Presented): A device according to claim 63, wherein each fixed electrode is disposed to face at least one end of the mobile electrode, on one side of the means for forming the at least one pivot.

74 (Previously Presented): A device according to claim 63, wherein the mobile electrode comprises at least two mobile parts, each mobile part being free at one of its ends.

75 (Withdrawn): A device according to claim 74, wherein the mobile electrode comprises three mobile parts, and the device includes three electrodes that are fixed and disposed to face the three mobile parts.

76 (Withdrawn): A device according to claim 74, wherein each mobile part of the mobile electrode is elongated, and laterally or angularly offset from each other.

77 (Withdrawn): A device according to claim 63, comprising three fixed electrodes, and the mobile electrode includes three strips connected through an end.

78 (Currently Amended): An electrostatic actuation device comprising:
a mobile part that is flexible and free to move with respect to a substrate, the mobile part including at least two electrodes, separated by an electrically insulating portion, and an electrical contact element fixed on the mobile part;

at least one fixed electrode, fixed with respect to the substrate, wherein the at least one fixed electrode is located on a same side of the mobile part, the at least one fixed electrode including a first part and a second part disposed to face a corresponding one of the electrodes of the mobile part; and

means for forming at least one pivot of at least one portion of the mobile part, said means forming at least one pivot being disposed directly under the mobile part that is flexible and free to move,

wherein each of the first part and the second part of the at least one fixed electrode is configured to progressively force the corresponding electrode of the at least two electrodes in the mobile part to contact the substrate as function of applied voltage, and

the mobile part bears directly on the means forming at least one pivot when the at least one fixed electrode attracts one of the electrodes of the mobile part, the other electrode of the mobile part being free to move away from the substrate by mechanical return forces, thereby moving the electrical contact between a high position and a low position.

79 (Previously Presented): A device according to claim 78, wherein the mobile part is free to move along at least a direction perpendicular to the substrate.

80 (Previously Presented): A device according to claim 78, wherein the at least one fixed electrode is separated from the mobile part by an insulating layer.

81 (Withdrawn): A device according to claim 78, wherein the mobile part is connected by a pad to a membrane.

82 (Previously Presented): A device according to claim 78, wherein the means forming the pivot comprises at least one pad fixed with respect to the substrate.

83 (Withdrawn): A device according to claim 78, wherein the means for forming the pivot comprises at least one arm arranged laterally with respect to the mobile part, or two arms arranged on each side of the mobile part.

84 (Withdrawn): A device according to claim 78, wherein the mobile part forms an elbow.

85 (Withdrawn): A device according to claim 78, wherein the at least one fixed electrode includes four fixed electrodes arranged in pairs facing each other, the mobile part comprising two mobile parts arranged crosswise.

86 (Withdrawn): A device according to claim 85, wherein the at least one pivot includes two pivots.

87 (Previously Presented): A device according to claim 80, wherein the mobile part comprises at least one part embedded or fixed on or in the substrate or the insulating layer.

88 (Previously Presented): A device according to claim 78, wherein the at least one fixed electrode is disposed to face at least one end of the mobile part, on one side of the means for forming the at least one pivot.

89 (Withdrawn): A device according to claim 78, wherein the mobile part comprises at least two mobile electrodes connected at one end by an insulating portion, each mobile electrode being free at one of its ends, and the device further comprises fixed electrodes disposed to face each mobile electrode.

90 (Withdrawn): A device according to claim 89, wherein the mobile part comprises three mobile electrodes.

91 (Withdrawn): A device according to claim 89, wherein the mobile electrodes are elongated and laterally or angularly offset from each other.

92 (Previously Presented): A device according to claim 78, wherein the at least one fixed electrode includes at least two fixed electrodes.

93 (Canceled).

94 (Withdrawn): A device according to claim 63, wherein the mobile electrode, the fixed electrodes, and the means forming the pivot are in a plane on a surface of the substrate.

95 (Withdrawn): A device according to claim 63, wherein the at least one mobile electrode comprises at least one magnetic or partially magnetic element, and the device further comprises at least one fixed magnetic or partially magnetic element, fixed with respect to the substrate, which attract each other.

96 (Withdrawn): A device according to claim 95, wherein an electrostatic force and magnetic force involved during said contact of said mobile part with said substrate has a relative difference of at least 10%.

97 (Withdrawn): A device according to claim 95, wherein an electrostatic force and magnetic force involved during said contact of said mobile part with said substrate is greater than the mechanical return forces.

98 (Withdrawn): A device according to claim 97, wherein an electrostatic force and magnetic forces involved during said contact of said mobile part with said substrate are at least 10 times greater than the mechanical return forces.

99 (Withdrawn): A device according to claim 95, wherein the at least one magnetic or partially magnetic element and the at least one fixed magnetic or partially magnetic element define at least two stable intermediate positions of the device between the high position and the low position.

100 (Canceled).

101 (Previously Presented): A device according to claim 63, wherein the means for forming the pivot holds a point of the mobile electrode at a height of between 50 nm and 20 μ m with respect to the substrate.

102-124 (Canceled).

125 (Previously Presented): A device according to claim 63, wherein said electrical contact element closes a circuit when it is in the low position.

126 (Previously Presented): A device according to claim 63, wherein said electrical contact element comes into contact with a track of a circuit when it is in the low position.

127 (Withdrawn): A device according to claim 95, wherein said magnetic or partially magnetic elements hold the electrical contact in the high and low positions.

128 (Withdrawn): A device according to claim 63, wherein said electrical contact element forms an armature, the device includes another armature being fixed with respect to said substrate, and said armatures form a variable capacitor.

129 (Withdrawn): A device according to claim 128, wherein said variable capacitor has continuous operations between said high and said low positions.

130 (Withdrawn): A device according to claim 128, wherein said variable capacitor has stable positions between said high and said low positions.

131 (Previously Presented): A device according to claim 78, wherein said electrical contact element closes a circuit when it is in the low position.

132 (Previously Presented): A device according to claim 78, wherein said electrical contact element is in contact with a track of a circuit when it is in the low position.

133 (Withdrawn): A device according to claim 78, wherein the at least one mobile electrode comprises at least one magnetic or partially magnetic element and the device further comprises at least one fixed magnetic or partially magnetic element fixed with respect to the substrate, which attract each other.

134 (Withdrawn): A device according to claim 133, wherein an electrostatic force and magnetic forces involved during said contact of said mobile part with said substrate has a relative difference of at least 10%.

135 (Withdrawn) A device according to claim 133, wherein an electrostatic force and magnetic forces involved during said contact of said mobile part with said substrate are greater than the mechanical return forces.

136 (Withdrawn): A device according to claim 135, wherein an electrostatic force and magnetic forces involved during said contact of said mobile part with said substrate are at least 10 times greater than the mechanical return forces.

137 (Withdrawn): A device according to claim 133, wherein the at least one magnetic or partially magnetic element and the at least one fixed magnetic or partially magnetic element define at least two stable intermediate positions of the device between the high position and the low position

138 (Withdrawn): A device according to claim 133, wherein said magnetic or partially magnetic elements hold the electrical contact element in the high and low positions.

139 (Previously Presented): A device according to claim 78, wherein said electrical contact element forms an armature, the device including another armature being fixed with respect to said substrate, and said armatures forming a variable capacitor.

140 (Previously Presented): A device according to claim 139, wherein said variable capacitor has continuous operations between said high and said low positions.

141 (Previously Presented): A device according to claim 139, wherein said variable capacitor has stable positions between said high and said low positions.